

DESCRIPTION OF A NEW GENUS AND SPECIES OF TRIPTERYGIID
FISH (PERCIFORMES : BLENNIOIDEI) FROM THE INDO-PACIFIC,
AND THE REALLOCATION OF *VAUCLUSSELLA ACANTHOPS*
WHITLEY, 1965.

by

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ABSTRACT. - *Ceratobregma helenae* is described as a new genus and species of fish of the family Tripterygiidae occurring in the eastern Indian, western and central Pacific oceans. The Australian species *Vauclusella acanthops* Whitley, 1965 is redescribed and assigned to *Ceratobregma*.

RESUME. - *Ceratobregma helenae* est décrit comme genre nouveau et espèce nouvelle de la famille des Tripterygiidae. Il se trouve dans l'océan Indien oriental et l'océan Pacifique occidental et central. L'espèce australienne *Vauclusella acanthops* Whitley, 1965, est redécrite et est attribuée au genre *Ceratobregma*.

Keywords : Tripterygiidae, *Ceratobregma helenae*, *Vauclusella acanthops*, new taxa, Indo-Pacific, Australia coasts.

During the past 20 years an increasing number of isolated places have been visited by ichthyologists. The development of SCUBA has enabled them to do more thorough collecting, particularly of small fishes, of benthic dwellers and of well camouflaged species. Most members of the family Tripterygiidae fall into these three categories : they are small - usually less than 40 mm SL, cryptic, benthic fishes. Much of the material used in this study was collected in such out-of-the-way places, by G.Allen and R. Steene at Christmas Island, by V. Springer at Taiwan, in the Philippines and in the Caroline Islands, and by D. Hoese and H. Larsen on the Great Barrier Reef.

In 1979, while working at the US National Museum of Natural History, I set some material aside not being able to refer it to any known Tripterygiidae genus. Both Hoese and Allen (pers. comm.) recognised that the two species here described should be placed in a new genus. I am grateful for their consent to describe this material.

MATERIALS AND METHODS

The material examined is listed with each species description. One specimen of each species was cleared and stained for bone and cartilage. Methods of counting and measuring follow those described by Holleman (1982).

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Summaries of morphometric and meristic data are given in Tables I and II.

The following institutional abbreviations are used in the text :

AMS - The Australian Museum, Sydney. ROM - Royal Ontario Museum, Toronto. USNM - United States National Museum, Smithsonian Institution, Washington, D.C. WAM - Western Australian Museum, Perth.

DESCRIPTIONS

Genus *Ceratobregma* gen. n.

Type species : *Ceratobregma helenae*, Holleman, by original designation.

Diagnosis : First dorsal fin with three spines ; anal fin with two spines ; pelvic fin with two rays not united by membrane. Lateral line discontinuous, consisting of anterior series of tubed scales ending below the second dorsal fin and posterior series of notched scales extending from below end of anterior series to base of caudal fin. Lateral ethmoids expanded to form bony ridges in front of eyes ; males having each ridge formed into vertical row of three or four 'horns', situated from just below posterior nostril to level of anterior nostril (Figure 1). Nasal and orbital tentacles present. Body is heavily scaled with ctenoid scales, except for cycloid scales on abdomen. Head naked except for tiny spines on top and along upper and posterior margins of eyes. Patch of teeth on vomer and anterior end of each palatine.

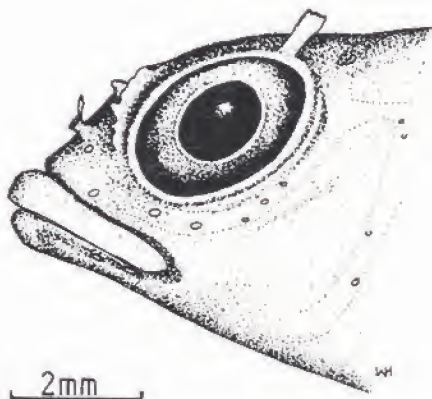


Fig. 1 : Head of *Ceratobregma helenae* : note "horns" on lateral ethmoid (no pigmentation is shown).

Description : Small - less than 40 mm SL - fishes with fusiform bodies. First dorsal fin with three spines, second with 15-18 spines, third with 9-10 undivided segmented rays, except for last ray which is usually divided to its base. Anal fin with two short spines and 19-22 undivided, segmented rays, except for last which is usually divided to its base. Pelvic fins with one short, hidden spine and two undivided segmented rays not connected by membrane. Pectoral fins with 16 rays of which uppermost two and lowermost seven are undivided ; remainder bifurcate. Caudal fin with 7 + 6 principal rays, uppermost and lowermost two are undivided, the remainder bifurcate, and 8-9 dorsal, 7-8 ventral procurrent rays.

Scales ctenoid, lying flat against body. Pectoral fin bases and at least posterior two-thirds of belly with small, thin, cycloid scales. Nape scaled but head

naked, except for many small spines on top of head and along upper and posterior margins of eyes. Scales on posterior half of body deciduous.

Lateral line discontinuous, comprising an anterior series of 15-20 tubed scales ending below posterior half of the second dorsal fin, and a posterior series of 20-24 notched scales from two scale rows below end of anterior series to base of caudal fin. Cephalic lateral line pores prominent, mandibular canals opening in two pores, one on either side of and just posterior to lower jaw symphysis. Orbital and anterior nasal tentacles present.

Anterior rims of orbits (lateral ethmoids) expanded to form prominent ridges raised in males to form vertical row of 3-4 'horns', largest uppermost. Interorbital area wide and concave; snout short and pointed. Teeth conical, fixed in both jaws. Broad, triangular patch of vomerine teeth present, as well as a patch on anterior end of each palatine. Septal bone present. Single, reduced pterygiophore present between second and third dorsal fins. Caudal skeleton with hypural 5 and two large epurals.

Comparisons : There are two other genera which share with *Ceratobregma* the combination of three first dorsal fin spines, two anal fin spines, two rays in each pelvic fin and a discontinuous lateral line : *Trypterygion* Risso, 1826 and *Enneanectes* Jordan and Evermann, 1895.

Trypterygion, with three species (Wirtz, 1980) is restricted to the Mediterranean and north-eastern Atlantic, the genus having its origins in the eastern Atlantic (Wirtz, 1978). *Enneanectes*, endemic to the Caribbean and tropical eastern Pacific (Rosenblatt, 1959 and 1960), comprises five species in the Caribbean and four in the eastern Pacific, forming a "compact group" (Rosenblatt, 1959). The fishes of this latter genus are generally small, seldom larger than 30mm SL. All species are characteristically banded with the darkest band across the caudal peduncle. By comparison *Trypterygion* spp. are considerably larger, attaining 60 mm SL. They lack the banding of *Enneanectes* spp. Males of *Trypterygion* acquire a black head during breeding, not known to occur in *Enneanectes*. Neither of these genera has the expanded lateral ethmoids of *Ceratobregma*, and *Ceratobregma*, although similar in size to *Enneanectes*, lacks the banding found in this genus. The three genera occur in disconnected geographical areas.

Etymology : The name is a combination of the Greek 'keratos', a horn, and 'bregma', the front of the head. It is given for the 'horns' males carry in front of their eyes. The gender is feminine.

Key to the species of *Ceratobregma* :

- A. Second dorsal fin with 15-16 spines, anal fin with 19-21, usually 20, rays.....*C. helenae* sp. nov.
- B. Second dorsal fin with 17-18 spines, anal fin with 21-22, usually 22, rays.....*C. acanthops*

***Ceratobregma helenae* sp. n. (Fig. 2)**

Description : Dorsal fins III, XV-XVI, 9-10; anal fin II, 19-21 (usually 20); pectoral fins 16 rays; lateral line anterior series of 15-17 tubed scales, posterior series of 22-24 notched scales; total lateral scales 34-36 rows; transverse scales 3/6. Orbital and anterior nasal tentacles long and leaf-like. Males with four lateral ethmoid 'horns'. Pectoral fins long, 9th ray extending to 12th or 13th spine of second dorsal fin. Inner pelvic rays extend to first anal fin ray.

Head 3.8 in SL; eye 2.8, upper jaw 2.7, snout 3.9 in head length. Vertebrae 11+26-27.

Colour when fresh : body pale, scale margins orange, orange blotch behind eye and another on the operculum (from Allen & Steene, 1979 : 57). Colour in alcohol : body pale and regularly criss-crossed by bands of small melanophores along the posterior margins of the scale pockets. There are small melanophores on the dorsal fin spines, along the margin of the second dorsal fin, on the rays of the pectoral fins and on the membrane of the anal fin. Males are more darkly pigmented, with the entire first dorsal fin dark, the second and third lighter, but with pigment extending to bases of fins. Pectoral fin bases of males have clusters of melanophores. There are irregular clusters of melanophores on the head. In some specimens the body has irregular vertical bands. The orbital tentacle is dark.

The balance of the description is as for the genus.

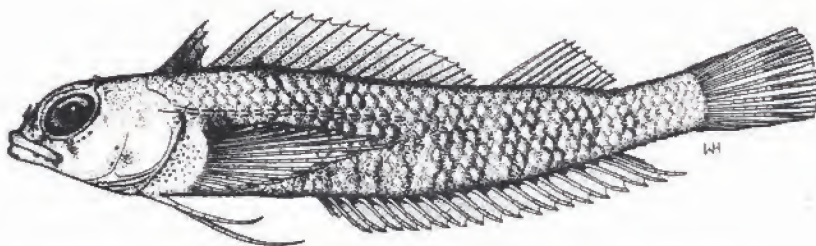


Fig. 2 : *Ceratobregma helenae* sp. n. WAM P 26098-012. Holotype, male, 29,2 mm SL.

Material examined :

Holotype : WAM P26098-012 (29,2 mm) ; shipwreck on north coast, Christmas island, Indian Ocean ($10^{\circ}29'S$, $105^{\circ}40'E$) ; depth 6-10 m ; 26 May 1978 ; G R Allen & R C Steene.

Paratypes : WAM P 26090-011 (29,0mm) ; South Point, Christmas Island. ($10^{\circ}29'S$, $105^{\circ}40'E$) ; depth 10-15 m ; 23 May 1978 ; G R Allen & R C Steene. WAM P 26113-018 (25,7 mm) ; Winifred Beach, Christmas Island ; depth 12-14 m ; 6 June 1978 ; GS. WAM P 26092-021 (5 : 20,2-28,2 mm) ; half km east of Margaret Beach, CI ; depth 14 m ; 25 May 1978 ; GS. WAM P 26110-015 (24,0 & 29,0 mm) ; Smith Point, CI ; depth 7-10 m ; 4 June 1978 ; GS. WAM P 26122-011 (27,0 mm) ; 2 km SE of North West Point, CI ; depth 8-10 m ; 10 June 1978 ; GS. WAM P 26080-017 (26,2 & 28,0 mm) ; Ethel Beach, CI ; depth 20-30 mm) ; 18 May 1978 ; GS. WAM P 26098-007 (3 : 26,9-29,0) ; shipwreck on north coast, CI ; depth 6-10 m ; 26 May 1978 ; GS. AMS I 19456-111 (25,0 mm) ; North end Yonge Reef, Queensland ($14^{\circ}35'S$ $145^{\circ}36'E$) ; depth 5-15 m ; 12 November 1975 ; AMS Party. USNM 280189 (3 : 23,1-33,2 mm) ; Ch'uan-fan-shih, Taiwan ; depth 0-6 m ; 23 April 1968 ; V G Springer ; field no. VGS 68-2. USNM 224336 (25,9 mm) ; entrance to Jokai Passage, Ponape, Caroline Islands ($07^{\circ}35'N$, $158^{\circ}124'E$) ; depth 0-15 m ; 8 September 1980 ; V G Springer et al. ; field no. VGS 80-8. USNM 280191 (2 : 21,3-26,4 mm) ; Cuyo Island, Palawan, Philippine Islands ($10^{\circ}58'N$; $121^{\circ}14'S$) ; depth 0-2 m ; 25 May 1978 ; V G Springer et al., field no. SP 78-25. USNM 220065 (6 : 22,5-32,2 mm) ; Aua Reef, Pago Pago Bay, Tutuila, American Samoa, depth 0-20 m ; R C Wass. USNM 280187 (29,8 mm) ; SW shore of Ch'uan-fan-shih, Taiwan ; depth 8-9 m ; 30 April 1968 ; V G Springer et al. ; field no. VGS 68-10. USNM 280188 (29,3mm) ; E rocky shore of Moa-pi Tou, Taiwan ($21^{\circ}55'N$, $120^{\circ}44'E$) ; depth 12-14 m ; 6 May 1968 ; V G Springer & J H Choat ; field no. VGS 68-20. USNM 280190 (3 : 26,9-31,0 mm) ; west side of Siquijor Island, Philippine Islands ($09^{\circ}08'N$, $123^{\circ}30'E$) ; depth 0-11 m, 10 May 1978 ; V G Springer et al. ; field no. SP 78-7.

Distribution of the species is shown in Figure 4.

Etymology : The species I have named for my wife, Helen.

Remarks : This species was referred to as *Tripterygion* Sp.2 by Allen & Steene (1979) in their report on the fishes of Christmas Island.

Ceratobregma acanthops (Whitley) com. n. (Fig. 3)

Vauclusella acanthops Whitley 1965 : 116 ; Heron Island, Queensland.

Description : Dorsal fins III, XVII-XVIII, 9-10 ; anal fin II, 21-22 (usually 22) ; pectoral fins 15 or 16 rays ; lateral line anterior series 18 or 19 tubed scales, posterior series 22 or 23 notched scales ; total lateral scales 37 rows ; transverse scales 3/6. Orbital and nasal tentacles long and pointed. Males usually with three lateral ethmoid 'horns'. Pectoral fins long, 9th ray extending to penultimate dorsal fin spine. Inner pelvic fin rays extend to anal fin spines.

Head 3,9 in SL ; eye 2,8 upper jaw 2,7, snout 3,7 in head length. Vertebrae 11 + 28.

Colour in alcohol : body pale with irregular clusters of small melanophores. There are small melanophores on the base of the dorsal fin elements and a light sprinkling on the membranes. There is very little pigmentation on the anal fin, none on the caudal, and but a few melanophores at the base of the pectoral fin rays. The head is fairly evenly covered with melanophores and there may be a darker vertical band below the eye. The orbital tentacle is nearly black.

The balance of the description is as for the genus.

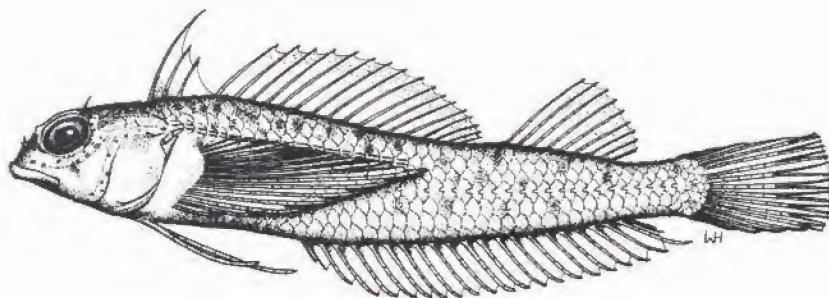


Fig. 3 : *Ceratobregma acanthops* from AMS I 21422-016, Males, 36,5 mm SL.

Material examined :

Holotype : AMS IB 4016, Heron Island, Queensland (Whitley 1965 : 117).

Non-types : AMS I 21495-044 (3 : 31,5-34,6 mm) ; Lady Musgrave Reef, Queensland (23°54'S, 152°23'E) ; depth 5 m ; 20 February 1980 ; B Russel & J Bell. AMS I 21422-116 (4 : 29,0-35,0 mm) ; Lizard Island, Queensland (14°41'S, 145°26'E) ; depth 1-8 m ; 23 January 1975 ; H Larson & L Auty. AMS I 19456-095 (3 : 26,3-34,4 mm) ; Yonge Reef, Queensland (14°35'S, 145°36'E) ; depth 5-15 m ; 12 November 1975 ; AMS Party. AMS I 19338-023 (32,9 & 36,6 mm) ; One tree Island, Queensland (23°30'S, 152°05'E) ; depth 3-6 m ; 26 November 1969. ROM 51366 (33,8 mm) ; Eagle Island, Queensland (15°42'S, 145°24'E) ; depth 5-7 m ; 19 September 1981 ; R Winterbottom *et al.* ; field number RW 81-11. USNM 280368 (21,6 & 29,2 mm) ; One Tree island, Queensland ; depth 1m ; 30 November 1966 ; V G Springer *et al.* ; field number VGS 66-13. USNM 280369 (40,0 mm) ; One Tree Island, Queensland ; depth 8-12 m ; 12 December 1966 ; V G Springer *et al.* ; field number VGS 66-16. USNM 280370 (34,4 mm) ; Heron Island,

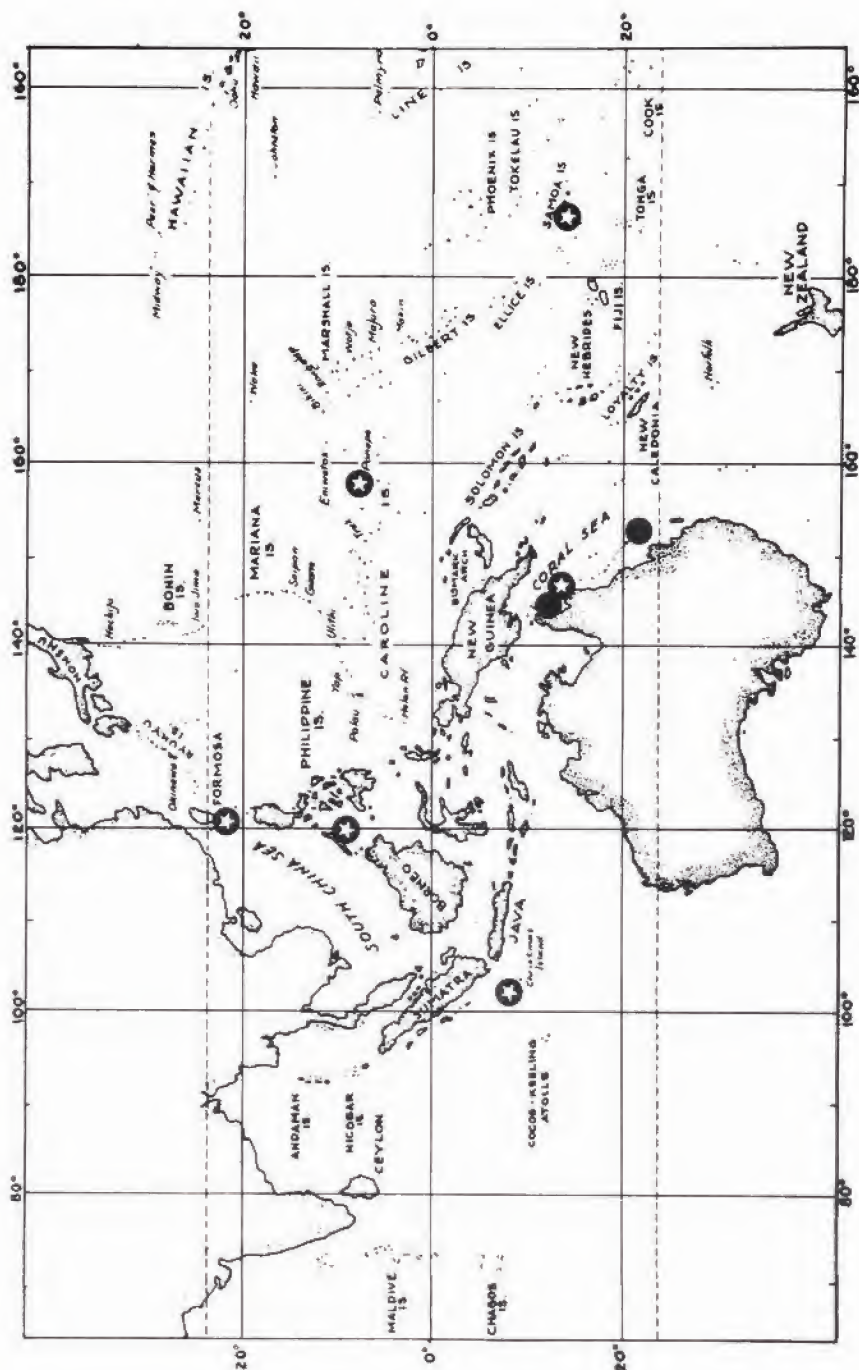


Fig. 4 : Distribution of *Ceratobregma helenae* and *C. acanthops*.

Queensland ; J H Choat ; field number RC 13. USNM 280367 (3 : 32,2-34,7 mm) : One Tree Island, Queensland ; depth 5 m ; V G Springer *et al.* ; field number VGS 66-7.

Distribution : This species appears to be restricted to the Barrier Reef, Australia (Fig. 4).

DISCUSSION

Whitley (1931) designated *Tripterygium annulatum* Ramsay & Ogilby, 1888 as the type species of *Vaclusella*. He considered this species sufficiently different from *Enneapterygius* spp. (*Enneapterygius*....., has less than thirty transverse series of scales and higher dorsal fins" - Whitley 1931 : 324) that he described a new genus for it. Examination of *V. annulata* showed that the species *acanthops* is not congeneric as stated by Whitley (1965 : 117) ; *V. annulata* has only one anal fin spine and lack the expanded lateral ethmoids of *Ceratobregma acanthops*.

Whitley's holotype of *Vaclusella acanthops* was kindly provided on loan by the Australian Museum. The specimen is not in very good condition and has lost most of the caudal, first and second dorsal fins. Whitley's figure (1965 : 117, Figure 12) shows most of the second dorsal fin missing. Both his counts and figure were found to be inaccurate : he records D III, XVII, 8 ; A II, 19 ; lateral line 16+21, whereas the actual counts are D III, XVII, 9, A II, 22, lateral line 18+23. He shows the second dorsal fin too high, the 9th pectoral ray a little too long and the pelvic fin rays much too long. By contrast, a few males were found with the first dorsal fin spine twice the length of the second. This apparent sexual dimorphism is not unknown amongst tripterygiids ; Zander & Heymer (1970) and Wirtz (1978) recorded an elongate first spine of the second dorsal fin in large males of *Tripterygion* spp. The caudal fin of Whitley's figure of *V. acanthops* also is inaccurate ; no tripterygiid known has a pointed caudal ; all are truncate or slightly rounded.

The distributions of the two species are of interest. Figure 4 shows *Ceratobregma acanthops* from the northern and southern ends of the Great Barrier Reef. *C. helenae* has a much more extensive distribution in the eastern Indian Ocean, Philippine Islands, Taiwan, Samoa (ie. marginal on the Pacific Plate) and Ponape (at the far end of the Caroline Islands conduit of Springer 1982 : 124). At the north end of the Barrier Reef *C. helenae* is found with *C. acanthops*. Similar distributions are shown by other tripterygiid fishes. *Ucla xenogrammus* (Holleman, in press) has a distribution very similar to that of *C. helenae*, including the Caroline Islands conduit, as has *Norfolkia brachylepis*. This latter species ranges even farther west to the Red Sea and the east coast of Africa (Holleman, in press). By contrast, *Norfolkia thomasi* has been recorded only from the southern Barrier Reef, Lord Howe and Norfolk Islands.

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Table I. Summary of morphometric data for *Ceratobregma helenae* and *C. acanthops*.

		<i>C. helenae</i>	<i>C. acanthops</i>
<i>Fins :</i>			
First dorsal - spines	III	35	22
Second dorsal - spines	XV	21	
	XVI	14	
	XVII		21
	XVIII		1
Third dorsal - rays	9	13	14
	10	22	8
Anal - spines	11	35	22
- rays	19	4	
	20	26	1
	21	5	2
	22		19
<i>Lateral line :</i>			
Anterior series	15	5	
	16	12	
	17	10	
	18		3
	19		8
Posterior series	22	6	5
	23	8	3
	24	7	
<i>Vertebrae :</i>			
Precaudal	11	32	17
Caudal	26	15	
	27	17	1
	28		16

Table II. Summary of meristic data for *Ceratobregma helenae* and *C. acanthops*. (mean values given in parenthesis).

	<i>C. helenae</i> n=34	<i>C. acanthops</i> n=22
Head in SL	3,4-4,2 (3,8)	3,7-4,1 (3,9)
Eye in Head	2,5-3,1 (2,8)	2,5-3,1 (2,8)
Upper jaw in Head	2,4-3,2 (2,7)	2,5-3,0 (2,7)
Snout in Head	3,6-4,2 (3,9)	3,4-4,1 (3,7)

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